

FY15 NM WRI Research Progress Report Form

Report Due Date: December 1, 2014

1. **Project Title:** A Dynamic Statewide Water Budget for New Mexico
2. **Investigators:** *Principal:* Jesse Roach Ph.D., Tetra Tech Inc. *Unfunded Collaborators:* Vince Tidwell Ph.D., Sandia National Laboratories, Bruce Thompson Ph.D., University of New Mexico. *Other researcher:* Kenneth Peterson M.S., New Mexico State University
3. **Description:** The dynamic, statewide water budget (DSWB) will synthesize water supply and demand information from across the state into a single, easily accessible location, and in such a way that users can view information at a variety of spatial scales. The overall objective of the project is a holistic view of water resources in the state to help support local and regional education and planning to improve stewardship of New Mexico's limited and critically important water resources.
4. **Methodology:** The DSWB is being built by pulling existing information from a variety of sources, predominately the New Mexico Office of the State Engineer / Interstate Stream Commission's Regional Water Plans (NM-OSE-ISC, 1999-2008), the New Mexico Office of the State Engineer's Water Use reports (Longworth, Valdez, Magnuson, & Richard, 2013) and USGS stream gage information.
5. **Results to Date and Work Remaining:**
 - a. Model development to date has been documented. Specifically, the current draft documentation (which will make up a large portion of the final report) includes descriptions of the human population model, municipal and self supplied domestic water use, and agricultural use including descriptions of precipitation data manipulation and evapotranspiration calculations. (This completes remaining work item "j" in the October 1 progress report.)
 - b. The regional plans were mined for agricultural area and consumption, and no new information was found, but a new NMSU reference was discovered that helped in quantification of agricultural areas. (This completes remaining work item "k" in the October 1 progress report.)
 - c. Conversations did occur with Nathan Myers at USGS and Talon at NMBG about the status of their work and if and how we will be able to incorporate it into our modeling efforts. The NMBG recharge work will only produce locational information this year, and so will not be particularly useful. The USGS work will be useful, especially in quantifying losing and gaining reaches. (This completes remaining work item "l" in the October 1 progress report.)
 - d. We have completed implementation of Blaney Criddle crop consumption and are reaching out to OSE staff to see why our calculations give numbers consistently higher than the numbers they publish.
 - e. We have added riparian area and riparian consumption information to the model.
 - f. We have plotted consumption as a fraction of diversions for public supplied and domestic self-supplied water by county to use in estimates of indoor and outdoor use.
 - g. We have updated our conceptual mass balance model.

- h. We produced a poster and an oral presentation summarizing our work for the WRI conference.
- i. Remaining work: We need to add use information for livestock, mining, and energy production to the consumption portion of the model.
- j. Remaining work: We need to add surface water information from the USGS work to the model. This will involve choosing gages as representative of surface water entering or leaving a particular mass balance accounting unit.
- k. Remaining work: We need to add groundwater recharge information and storage change information as available. Need to talk to Stacy Timmons at NMBG to see if she will have groundwater storage change estimates we can use.
- l. Remaining work: We need to find reservoir storage data for Pecos reservoirs, Canadian reservoirs, San Juan reservoir. Others? Ruidoso?

6. **Student participation:** None

7. **Special recognition awards or notable achievements:** We presented an oral presentation as part of a panel, and also a poster at the November WRI conference. Feedback to both was very good.

8. **References:**

Longworth, J. W., Valdez, J. M., Magnuson, M. L., & Richard, K. (2013). *New Mexico Water Use by Categories 2010*. Santa Fe: New Mexico Office of the State Engineer.
NM-OSE-ISC. (1999-2008). *New Mexico Regional Water Plans*. Santa Fe: New Mexico Office of the State Engineer / Interstate Stream Commission.

9. **Progress toward uploading data to a common/standardized platform:** We have spoken with Fereshteh Soltani at NMSU about the type of data we expect to produce. Generally, the output from the DSWB will be available in Microsoft EXCEL file format.

10. **Provide two PP slides that provide summary information on your project appropriate for viewing by state legislators.**